WHAT IS CLAIMED IS:

1. A servomechanism having proportional, integral, and differential control (PID) receiving an error signal and generating a command signal comprising:

a first gain block having an input receiving the error signal, an output and a first gain;

a first rate-limiter block having an input connected to said output of said first gain block, an output and a first rate limit;

a derivative block having an input receiving the error signal and an output;

a first summer-block having a first input connected to said output of said first rate-limiter block and a second input connected to said output of said derivative block and a first sum output;

a second rate-limiter block having an input connected to said output of said first gain block, and output and a second rate limit less than said first rate limit;

an integrator block having an input connected to said first sum output of said first summer-block and an output;

a second gain block having an input connected to said output of said integrator block, an output and a second gain;

a third gain block having an input connected to said output of said derivative block, an output and a third gain; and

second summer-block having a first input connected to said output of said second gain block, a second input connected to said output of said third gain block, a third input connected to said output of said second rate-limiter

block, and a second sum output, said second sum output being said command signal.

2. The servomechanism of claim 1 further including:

a fourth gain block having an input connected to said second sum output of said second summer-block, an output being said command signal and a fourth gain.

3. The servomechanism of claim 1 further including:

at least one low-pass filter connected between said output of said derivative block and said input of said first summer-block and said input of said third gain block.

4. The servomechanism of claim 3 wherein:

said at least one low-pass filter includes

a first low-pass filter having an input connected to said output of said derivative block, an output and s first cutoff frequency, and

a second low-pass filter block having an input connected to said output of said first low-pass filter, and output and a second cutoff frequency higher than said first cutoff frequency.

5. The servomechanism of claim 4 wherein:

said first cutoff frequency and said second cutoff frequency are both higher than an effective cutoff frequency of said integrator block and an effective cutoff frequency of said derivative block.

6. The servomechanism of claim 5 wherein:

said first gain K_R, said second gain K_I, said third gain K_D and said fourth gain K_C are set whereby

$$K_i = 2 \times w_1$$

$$K_r = 2 \times w_1$$

$$K_d = \frac{(4 \times w_1)}{w_2}$$

$$K_c = \frac{1}{(4 \times w_1)}$$

where W_1 is said effective cutoff frequency of said integrator block and W_2 is said effective cutoff frequency of said derivative block.

7. A method of servo control receiving an error signal and generating a command signal comprising the steps of:

amplifying the error signal by a first gain;

limiting the amplified error signal by a first rate limit;

forming a derivative of the error signal;

summing the a first rate limited amplified error signal and the derivative of the error signal thereby forming a first sum signal;

limiting the amplified error signal by block second rate limit, the second rate limit less than the first rate limit;

integrating block the first sum signal;

amplifying the derivative of the error signal by a second gain;

amplifying the integrated first sum signal by a third gain; and

summing amplified first sum signal, the amplified derivative signal and the second rate limited error signal thereby forming a second sum signal being said command signal.

8. The method of claim 7 further including:

amplifying the second sum signal by a fourth gain.

9. The method of claim 7 further including:

low-pass filtering the derivative signal.

10. The method of claim 9 wherein:

said step of low-pass filtering the derivative signal includes

a first low-pass filtering having a first cutoff frequency, and

a second low-pass filtering having a second cutoff frequency higher than said first cutoff frequency.

11. The method of claim 10 wherein:

said first cutoff frequency and said second cutoff frequency are both higher than an effective cutoff frequency of said integrator block and an effective cutoff frequency of said derivative block.

12. The method of claim 11 wherein:

said first gain K_R, said second gain K_I, said third gain K_D and said fourth gain K_C are set whereby

$$K_i = 2 \times w_1$$

$$K_r = 2 \times w_1$$

$$K_d = \frac{(4 \times w_1)}{w_2}$$

$$K_c = \frac{1}{(4 \times w_1)}$$

where W_1 is said effective cutoff frequency of said integrator block and W_2 is said effective cutoff frequency of said derivative block.